

Sub #17

What is claimed is:

1. A method for making a thin silicon structure comprising the steps of:  
providing a glass wafer or substrate;  
providing a silicon wafer having a first substantially planar surface and a second substantially planar surface;  
forming a recess in said glass wafer or silicon wafer first surface;  
bonding said silicon wafer to said glass wafer such that at least part of said silicon wafer first surface bonds to said glass wafer and at least part of said silicon wafer first surface overhangs said recess; and  
selectively removing a portion of said silicon wafer from said silicon wafer second surface through to said silicon wafer first surface such that a silicon structure is formed overhanging said recess.
2. A method for making a thin silicon structure as in claim 1, further comprising forming at least one electrode on said glass wafer within said recess.
3. A method for making a thin silicon structure as in claim 2, wherein said electrode forming step includes forming a titanium-platinum electrode.
4. A method for making a thin silicon structure as in claim 2, wherein said electrode forming step includes forming a gold electrode.
5. A method for making a thin silicon structure as in claim 1, wherein said bonding step includes anodic bonding.
6. A method for making a thin silicon structure as in claim 1, wherein said selectively removing silicon step includes a DRIE process.
7. A method for making a thin silicon structure comprising the steps of:  
providing a glass wafer or substrate;  
providing a silicon wafer having a first substantially planar surface and a second substantially planar surface;

forming a recess in said glass wafer surface or said silicon wafer;  
providing a patterned metal layer adjacent the silicon wafer, the patterned metal layer coinciding with said recess;  
bonding said silicon wafer to said glass wafer such that at least part of said silicon wafer first surface bonds to said glass wafer and overhangs said recess;  
selectively etching said silicon wafer above said recess from said second surface through to said first surface and stopping at or near said metal layer to form a silicon structure that at least partially overhangs said recess; and  
removing said metal layer.

8. A method for making a thin silicon structure as in claim 7, further comprising forming at least one electrode on said glass wafer that is in alignment with at least part of said recess.

9. A method for making a thin silicon structure as in claim 7, wherein said bonding step includes anodic bonding.

10. A method for making a thin silicon structure as in claim 7, wherein said etching step includes a DRIE process.

11. A method for making a thin silicon structure as in claim 8, wherein said electrode forming step includes forming a titanium-platinum electrode.

12. A method for making a thin silicon structure as in claim 8, wherein said electrode forming step includes forming a gold electrode.

13. A method for making a thin silicon structure as in claim 8, wherein said electrode includes an electrode tab or ear extending nearer the unrecessed surface of the glass wafer or silicon wafer.

14. A method for making a thin structure, comprising:  
providing a first wafer or substrate;

providing a second wafer having a first substantially planar surface and a second substantially planar surface;

forming a recess in said first wafer substrate;

bonding said second wafer to said first wafer such that at least part of said second wafer first surface bonds to said first wafer so that at least part of said second wafer first surface overhangs said recess; and

selectively removing a portion of said second wafer from said second wafer second surface through to said second wafer first surface such that a thin structure is formed overhanging said recess.

15. A method for making a thin structure as in claim 14, wherein the first wafer or substrate is a glass wafer or substrate.

16. A method for making a thin structure as in claim 15, wherein the second wafer is a silicon wafer.

17. A method for making a thin structure as in claim 14, wherein the first wafer or substrate is a silicon wafer.

18. A method for making a thin structure as in claim 17, wherein the second wafer is a glass wafer or substrate.

19. A method for making a thin structure as in claim 14, further comprising:

providing a patterned metal layer on the first substantially planar surface of the second wafer, such that the metal layer is patterned to coincide with said recess;

stopping the selective etching step at or near said metal layer to form the thin structure; and

removing said metal layer.

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